AMENDMENTS TO THE SPECIFICATION

In the Specification

Please substitute the following amended paragraph(s) and/or section(s) (deleted matter is shown by strikethrough and added matter is shown by underlining):

At page 9, lines 23-20, please replace the paragraph with the following.

Forming a cladding with a lower index-of-refraction adjacent the core can reduce transmission loss of the core while preserving the single mode character of the core. The placement of a cladding with an index-of-refraction lower than the average index-of-refraction of the cladding can be accomplished with a gradient in index-of-refraction formed with photosensitive material. The placement of a lower index-of-refraction cladding adjacent a core material is described further in copending and commonly assigned U.S. Patent application 10/027,906, now U.S. Patent 6,952,504 to Bi et al., entitled "Three Dimensional Engineering of Optical Structures," incorporated herein by reference.

At page 14, line 16 to page 15, line 4, please replace the paragraph with the following.

Integrated optical circuits generally comprise a plurality of optical devices that are optically connected. In a planar optical structure, a layer of optical material can include one or more optical circuits that form corresponding optical pathways along the layer. Due to improved processing ability of light reactive deposition, multiple layer optical structures with multiple layers having independent light pathways have been described. These multiple layered optical structures are described further in copending and commonly assigned PCT application PCT/US01/45762 designating the U.S. filed on October 26, 2001, now U.S. Patent 7,039,264 to Bi et al., entitled "Multilayered Optical Structures," incorporated herein by reference. Furthermore, light reactive deposition can be adapted for full three-dimensional integration of

optical structures to take advantage of composition variation in three dimensions. Thus, a monolithic optical structure can be formed with full integration within one or more layers and between layers to form a highly compact optical structure with the capability of complex functionality. The formation of three-dimensional structures is described further in copending and commonly assigned U.S. Patent application 10/027,906, now U.S. Patent 6,952,504 to Bi et al., entitled "Three Dimensional Engineering of Optical Structures," incorporated herein by reference. The index-of-refraction selection approaches described herein can be adapted in the formation of complex multilayered optical structures by designing the structures for light pathways to the photosensitive material for index-of-refraction selection or by performing the index-of-refraction selection on intermediate structures before all of the layers of the structure are deposited.

At page 29, lines 16-22, please replace the paragraph with the following.

Thus, using light reactive deposition, a range of effective approaches are available to vary the chemical composition of optical materials within layers and in different layers to form three-dimensional optical structures with selected compositions are selected locations within the material. The patterning of compositions of optical materials during the deposition process is described further in copending and commonly assigned U.S. Patent application 10/027,906, now U.S. Patent 6,952,504 to Bi et al., entitled "Three Dimensional Engineering of Optical Structures," incorporated herein by reference.

At page 33, line 20 to page 34, line 10, please replace the paragraph as follows.

Several different types of nanoscale particles have been produced by laser pyrolysis. Similar particles can be produced for light reactive deposition based on the description above. Such nanoscale particles for light reactive deposition can generally be characterized as comprising a

composition comprising a number of different elements that are present in varying relative proportions, where the number and the relative proportions are selected based on the application for the nanoscale particles. Materials that have been produced (possibly with additional processing, such as a heat treatment) or have been described in detail for production by laser pyrolysis/light reactive deposition include, for example, amorphous SiO_2, doped SiO_2, crystalline silicon dioxide, titanium oxide (anatase and rutile TiO_2), MnO, Mn_2O_3, Mn_3O_4, Mn_5O_8, vanadium oxide, silver vanadium oxide, lithium manganese oxide, aluminum oxide (γ-Al_2O_3, delta-Al_2O_3 and theta-Al_2O_3), doped-crystalline and amorphous alumina, tin oxide, zinc oxide, rare earth metal oxide particles, rare earth doped metal/metalloid oxide particles, rare earth metal/metalloid sulfides, rare earth doped metal/metalloid sulfides, silver metal, iron, iron oxide, iron carbide, iron sulfide ($Fe_{1-x}S$), cerium oxide, zirconium oxide, barium titanate ($BaTiO_3$), aluminum silicate, aluminum titanate, silicon carbide, silicon nitride, and metal/metalloid compounds with complex anions, for example, phosphates, silicates and sulfates. In particular, many materials suitable for the production of optical materials can be produced by light reactive deposition. The production of particles by laser pyrolysis and corresponding deposition by light reactive deposition having ranges of compositions is described further in copending and commonly assigned U.S. Patent application 10/027,906, now U.S. Patent 6,952,504 to Bi et al., entitled "Three Dimensional Engineering of Optical Structures," incorporated herein by reference.

At page 43, lines 8-15, please replace the paragraph with the following.

Substrates of a planar optical structure can be identified as materials that can be optically isolated from materials that transmit light, i.e., non-optical materials. A substrate can be formed from silicon, alumina or other convenient flat materials. Common substrates are round wafers, although substrates that are square or other shapes can be used. While planar optical structures generally are formed on a substrate, the substrate can be subsequently removed. The formation of

substrateless planar optical structures using release layers is described further in copending and commonly assigned U.S. Patent Application serial number 09/931,977, now U.S. Patent 6,788,866 to Bryan, entitled "Layer Materials On Substrates," incorporated herein by reference.